

IN THE CLAIMS:

The following is a complete listing of the claims, and replaces all earlier version and listings.

1. (currently amended): A printing control apparatus for outputting print data and executing printing, comprising:

storage means, to which rendering instructions are input, for storing the rendering instructions page by page;

first rendering means for developing rendering instructions of each scan line into multivalued bitmap data and subjecting the multivalued bitmap data to color processing and n-value conversion processing;

second rendering means for subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data;

determining means for reading out rendering instructions that have been stored in said storage means and determining whether the rendering instructions include a rendering instruction other than overwrite; and

control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said determining means

determines that the rendering instructions do not include a rendering instruction other than the overwrite,

wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instructions for one scan line into bitmap data line by line before rendering the next scan line.

2. (original): The apparatus according to claim 1, wherein said first rendering means includes:

means for generating multivalued bitmap data based upon the rendering instructions;

first color correcting means for performing a color correction of the multivalued bitmap data;

first color converting means for converting colors of the multivalued bitmap data that has been subjected to the color correction by said first color correcting means to multivalued bitmap data of another color space; and

n-value converting means for subjecting the multivalued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion.

3. (original): The apparatus according to claim 1, wherein said second rendering means includes:

second color correcting means for correcting colors of an image included in the rendering instructions;

second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space;

image n-value converting means for subjecting the image data of the image that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern; and

means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means.

4. (original): The apparatus according to claim 1, wherein said storage means sorts and stores entered rendering instructions, and said first and second rendering means read out and process the rendering instructions in the order in which they have been sorted and stored in said storage means.

5. (original): The apparatus according to claim 4, wherein the sorting order is in a direction from the top to the bottom of a page.

6. (original): The apparatus according to claim 1, wherein the value of n is 2.

7. (currently amended): A printing control method for outputting print data and executing printing, comprising:

a storage step of inputting rendering instructions and storing the rendering instructions in a memory page by page;

a first rendering step of developing rendering instructions of each scan line into multivalued bitmap data and subjecting the multivalued bitmap data to color processing and n-value conversion processing;

a second rendering step of subjecting the rendering instructions to color processing and n-value conversion processing color by color of the rendering instructions, storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data;

a determining step of determining whether rendering instructions that have been read out of the memory include a rendering instruction other than overwrite; and

a control step of extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering step to form the multivalued bitmap data between the edges if it is determined in said determining step that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering step to form the n-valued bitmap data if it is determined in said determining step that the rendering instructions do not include a rendering instruction other than the overwrite,

wherein said control step includes causing execution of said first rendering step or said second rendering step to develop all the rendering instruction for one scan line into bitmap data line by line before rendering the next scan line.

8. (original): The method according to claim 7, wherein said first rendering step includes:

a step of generating multivalued bitmap data based upon the rendering instructions;

a first color correcting step of performing a color correction of the multivalued bitmap data;

a first color converting step of converting colors of the multivalued bitmap data that has been subjected to the color correction at said first color correcting step to multivalued bitmap data of another color space; and

an n-value converting step of subjecting the multivalued bitmap data that has been subjected to the color conversion at said first color converting step to an n-value conversion.

9. (previously presented): The method according to claim 7, wherein said second rendering step includes:

a second color correcting step of correcting colors of an image included in the rendering instructions;

a second color converting step of converting colors of the image that has been subjected to the color correction in said second color correcting step to colors of another color space;

an image n-value converting step of subjecting the image data of the image that has been subjected to the color conversion at said second color converting step to an n-value conversion and creating an n-valued pattern; and

a step of creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed in said image n-value converting step.

10. (previously presented): The method according to claim 7, wherein inputted rendering instructed are sorted and stored in the memory in said storage step, and the rendering instructions are read out and processed in said first and second rendering steps in the order in which they have been sorted and stored in the memory.

11. (original): The method according to claim 10, wherein the sorting order is in a direction from the top to the bottom of a page.

12. (currently amended): A printer driver for receiving rendering instructions from an application, creating print data and outputting the print data to a printing apparatus, comprising:

storage means, to which rendering instructions are input from the application, for storing the rendering instructions in a memory page by page;

first rendering means for expanding rendering instructions ~~of each~~ of each scan line, which rendering instructions have been stored in the memory, into multivalued bitmap data and subjecting the multivalued bitmap data to color processing and n-value conversion processing;

second rendering means for subjecting the rendering instructions that have been stored in the memory to color processing and n-value conversion processing color by

color of the rendering instructions, storing the results in the form of an n-valued pattern, and rendering the n-valued pattern of each line into n-valued bitmap data;

determining means for reading out rendering instructions that have been stored in the memory and determining whether the rendering instructions include a rendering instruction other than overwrite; and

control means for extracting edges of objects in the rendering instructions in each scan line and exercising control so as to cause said first rendering means to form the multivalued bitmap data between the edges if said determining means determines that the rendering instructions include a rendering instruction other than the overwrite, and to cause said second rendering means to form the n-valued bitmap data if said determining means determines that the rendering instructions do not include a rendering instruction other than the overwrite,

wherein said control means causes said first rendering means or said second rendering means to develop all the rendering instructions for one scan line into bitmap data line by line before rendering the next scan line.

13. (original): The printer driver according to claim 12, wherein said first rendering means includes:

means for generating multivalued bitmap data based upon the rendering instructions;

first color correcting means for performing a color correction of the multivalued bitmap data;

first color converting means for converting colors of the multivalued bitmap data that has been subjected to the color correction by said first color correcting means to multivalued bitmap data of another color space; and

n-value converting means for subjecting the multivalued bitmap data that has been subjected to the color conversion by said first color converting means to an n-value conversion.

14. (original): A printer driver according to claim 12, wherein said second rendering means includes:

second color correcting means for correcting colors of an image included in the rendering instructions;

second color converting means for converting colors of the image that has been subjected to the color correction by said second color correcting means to colors of another color space;

image n-value converting means for subjecting the image data of the image that has been subjected to the color conversion by said second color converting means to an n-value conversion and creating an n-valued pattern; and

means for creating n-valued bitmap data based upon the n-valued pattern obtained by the n-value conversion performed by said image n-value converting means.